

## PLUTONIUM FUTURES—THE SCIENCE PRELIMINARY PROGRAM

SUNDAY, JULY 9, 2000

### Conference Registration

La Fonda Hotel Mezzanine  
12:00–8:00 P.M.

Session Chair: David L. Clark  
La Fonda Hotel, 1:30–5:00 P.M.

### Welcome

Fundamentals of Nuclear and Radiochemistry  
Introduction to Chemistry and Physics of Plutonium  
Overview of the Nuclear Fuel Cycle

## Tutorial Session

La Fonda Hotel Mezzanine, 6:00–8:00 P.M.

MONDAY, JULY 10, 2000

### Conference Registration

La Fonda Hotel

## Plenary Session

Session Co-Chairs: Timothy G. George & Bruce Matthews  
La Fonda Ballroom, 8:00 A.M.–12:00 P.M.

### John Browne

Director, Los Alamos National Laboratory  
Welcome

### Nikolai Ponomarev-Stepnoi

Academician, Russian Research Centre, Kurchatov Institute

### Ernest J. Moniz

Undersecretary of Energy, U.S. Department of Energy

BREAK

### Leo Brewer

Department of Chemistry, University of California  
“How to Develop New Materials”

### Vladimir Onoufriev

International Atomic Energy Agency  
“Status and Trends in Plutonium Recycling in Nuclear Power Reactors”

### Siegfried S. Hecker

Los Alamos National Laboratory  
“Fundamentally, Why Is Plutonium Such an Unusual Metal?”

**I. Materials  
Science/  
Nuclear Fuels**

La Fonda Ballroom, 1:30–5:00 p.m.

**Self-Irradiation of Pu, Its Alloys and Compounds**

L. F. Timofeeva  
(GNC RF A.A. Bochvar's VNIINM, Russia)

**Modeling of Delta-Phase Stabilization and Compositional Homogenization in Pu-1 Wt. % Ga Alloys**

J. N. Mitchell, F. E. Gibbs, T. G. Zocco, R. A. Pereyra  
(Los Alamos National Laboratory)

**Radiation Resistance of Gadolinium Zirconate Pyrochlore**

S. X. Wang<sup>1</sup>, L. M. Wang<sup>1</sup>, R. C. Ewing<sup>1</sup>, K. V. Govidan Kutty<sup>2</sup>, W. J. Weber<sup>3</sup>  
(<sup>1</sup>University of Michigan, <sup>2</sup>Indira Gandhi Centre for Atomic Research, India,  
<sup>3</sup>Pacific Northwest National Laboratory)

**Plutonium Stabilization in Zircon: Effects of Self-Radiation**

W. J. Weber<sup>1</sup>, N. J. Hess<sup>1</sup>, R. E. Williford<sup>1</sup>, H. L. Heinisch<sup>1</sup>, B. D. Begg<sup>2</sup>, S. D. Conradson<sup>3</sup>, R. C. Ewing<sup>4</sup>  
(<sup>1</sup>Pacific Northwest National Laboratory, <sup>2</sup>Australian Nuclear Science and Technology Organisation, Australia, <sup>3</sup>Los Alamos National Laboratory, <sup>4</sup>University of Michigan)

BREAK

**Inert Matrix Fuels for Incineration of Plutonium and Transmutation of Americium**

Hj. Matzke  
(European Commission, Joint Research Centre, Institute for Transuranium Elements, Germany)

**Capability of the MIMAS Process to Convert the Stockpiles of Separated Plutonium into MOX Fuel for Use in LWRs**

P. Deramaix, Y. Vanderborck, W. Couwenbergh  
(Belgonucleaire S.A.)

**Some Less Conventional Options for Plutonium Disposal**

W. Stoll  
(Germany)

Panel Chair: Paul Cunningham  
La Fonda Ballroom, 7:00–9:00 p.m.

TUESDAY, JULY 11, 2000

La Fonda Ballroom, 8:30 a.m.–12:00 p.m.

**The Electronic Structure and Elastic Properties of the Actinide Chalcogenides**

**(U,Np,Pu,Am): The Puzzle of AmTe**

**P. Wachter<sup>1</sup>, M. Filzmoser<sup>1</sup>, J. Rebizant<sup>2</sup>**

(<sup>1</sup>Laboratorium für Festkörperphysik, ETH Zürich, Switzerland  
<sup>2</sup>European Institute for Transuranium Elements, Germany)

**Phase Transitions in Plutonium: New Insights from Diffraction**

A. C. Lawson<sup>1</sup>, B. Martinez<sup>1</sup>, J. A. Roberts<sup>1</sup>, R. B. Von Dreele<sup>1</sup>, J. W. Richardson, Jr.<sup>2</sup>, A. Mehta<sup>3</sup>, J. Arthur<sup>3</sup>

(<sup>1</sup>Los Alamos National Laboratory, <sup>2</sup>Argonne National Laboratory,

<sup>3</sup>Stanford Synchrotron National Laboratory)

**Magnetic Properties Of  $\text{Pu}_{(1-x)}\text{Am}_x$  Solid Solutions**  
M. Dormeval<sup>1</sup>, N. Baclet<sup>1</sup>, J. Fournier<sup>2</sup>  
(<sup>1</sup>CEA-Centre de Valduc, France, <sup>2</sup>Université Joseph Fourier LEG-INPG, France)

**X-ray Magnetic Scattering from Transuranium Systems**  
G. H. Lander<sup>1</sup>, D. Mannix<sup>1,2</sup>, R. Caciuffo<sup>3</sup>, N. Bernhoeft<sup>4</sup>, P. Normile<sup>5</sup>,  
W. G. Stirling<sup>5</sup>, E. Lidström<sup>2</sup>, A. Hiess<sup>6</sup>, C. Vettier<sup>2,6</sup>, F. Wastin<sup>1</sup>, and J. Rebizant<sup>1</sup>.  
(<sup>1</sup>European Commission, JRC, Institute for Transuranium Elements, Germany, <sup>2</sup>European Synchrotron  
Radiation Facility, France, <sup>3</sup>Università di Ancona, Italy, <sup>4</sup>Dépt. de Recherche Fond. sur la Matière  
Condensée, France, <sup>5</sup>Physics Dept., UK, <sup>6</sup>Institut Laue Langevin, France)

#### BREAK

**The Stabilization of fcc Plutonium: A Solid-State-Solution-Like Phase of  
Stable and Fluctuating Configuration Plutonium**  
B. R. Cooper  
(West Virginia University)

**Electronic Structure of  $\alpha$ - and  $\delta$ -Pu from PES Measurements**  
A. J. Arko, J. J. Joyce, L. Morales, J. Wills, J. Lashley  
(Los Alamos National Laboratory)

**Resonant Ultrasound Studies of Pu**  
A. Migliori, J. P. Baiardo, T. W. Darling, F. Friebert, B. Martinez, H. Roder, D. A. Dimitrov  
(Los Alamos National Laboratory)

### Poster Session

Session Co-Chairs: Sandra Mecklenburg & David E. Hobart  
La Fonda Santa Fe Room, New Mexico Room, & Mezzanine, 1:30–5:00 P.M.

WEDNESDAY, JULY 12, 2000

La Fonda Ballroom, 8:30 A.M.–12:00 P.M.

**Aquatic Chemistry of Actinides: Is a Thermodynamic Approach Appropriate  
to Describe Natural Dynamic Systems?**

J. I. Kim  
(Forschungszentrum Karlsruhe, Institut für Nukleare Entsorgungstechnik, Germany)

**Sorption of Plutonium onto Clinoptilolite (Zeolite) Colloids**  
N. L. Hakem, A. Brachmann, M. Zavarin, A. B. Kersting  
(Lawerence Livermore National Laboratory)

**Actinide (Pu, U) Interactions with Aerobic Soil Microbes and Their Exudates:  
Fundamental Chemistry and Effects on Environmental Behavior**  
M. P. Neu, C. E. Ruggiero, M. T. Johnson, J. R. Fairlee, J. H. Matonic, L. A. Vanderberg,  
L. E. Hersman, L. He, M. M. Cox, D. J. Chitwood, P. D. Gladden, G. L. Wagner  
(Los Alamos National Laboratory)

**The Interaction of Plutonium with Bacteria in the Repository Environment**  
J. B. Gillow<sup>1</sup>, A. J. Francis<sup>1</sup>, D. A. Lucero<sup>2</sup>, H. W. Papenguth<sup>2</sup>  
(<sup>1</sup>Brookhaven National Laboratory, <sup>2</sup>Sandia National Laboratories)

#### BREAK

**Transuranium Removal from Hanford High Level Waste Simulants  
Using Sodium Permanganate and Calcium**

W. R. Wilmarth, S. W. Rosencrance, C. A. Nash, F. F. Fonduer, D. P. DiPrete, C. C. DiPrete  
(Savannah River Technology Center, Westinghouse Savannah River Company)

**Radiolysis of Hexavalent Plutonium in Solutions of Uranyl Nitrate  
Containing Fission Product Simulants**

P. J. W. Rance<sup>1</sup>, B. Ya. Zilberman<sup>2</sup>, G. A. Akopov<sup>2</sup>  
(<sup>1</sup>British Nuclear Fuels, Sellafield, Seascale, Cumbria, UK, <sup>2</sup>V.G. Khlopin Radium Institute,  
2<sup>nd</sup> Murinsky Prospekt, St. Petersburg, Russia)

**Contribution of the Surface Contamination of Uranium-materials on the Quantitative Analysis  
Results by Electron Probe Microbeam Analysis**

O. Bonino<sup>1</sup>, C. Fournier<sup>1</sup>, C. Merlet<sup>2</sup>, C. Fucili<sup>1</sup>, O. Dugne<sup>1</sup>  
(<sup>1</sup>DCC/DTE/SIM – CEA Valrho BP 111, France, <sup>2</sup>ISTEEM, Université de Montpellier II, France)

**IV. Actinides/  
Processing**

La Fonda Ballroom, 1:30–5:00 p.m.

**Oxidation/Reduction of Multivalent Actinides in the Subsurface**

D. T. Reed<sup>1</sup>, B. E. Rittman<sup>2</sup>, S. B. Aase<sup>1</sup>, A. J. Kropf<sup>1</sup>

(<sup>1</sup>Argonne National Laboratory, <sup>2</sup>Northwestern University, Evanston, IL)

**Gas-Phase Plutonium Oxide Cluster Ions and Initial Actinide Ion Trapping Experiments**

J. K. Gibson, R. G. Haire, D. C. Duckworth

(Oak Ridge National Laboratory)

**Actinide Science with Soft X-ray Synchrotron Radiation**

D. K. Shuh

(The Glenn T. Seaborg Center, Berkeley)

**Recent Achievements in the Development of Partitioning Processes of Minor Actinides from Nuclear  
Wastes Obtained in the Frame of the NEWPART European Programme (1996-1999)**

C. Madic<sup>1</sup>, M. J. Hudson<sup>2</sup>, J. O. Lijenzen<sup>3</sup>, J. P. Glatz<sup>4</sup>, R. Nannicini<sup>5</sup>, A. Facchini<sup>6</sup>,  
Z. Kolarik<sup>7</sup>, R. Odoj<sup>8</sup>

(<sup>1</sup>CEA/Saclay, France, <sup>2</sup>University of Reading, <sup>3</sup>Chalmers University of Technology, <sup>4</sup>ITU, JRC, Karlsruhe,  
<sup>5</sup>ENEA, Ispra, Italy, <sup>6</sup>Politecnico Di Milano, <sup>7</sup>TNE, KFK, Karlsruhe, Germany, <sup>8</sup>ISR, FZJ, Juelich,  
Germany)

BREAK

**Actinide Chemistry: From Test Tube to \$B Plant – A BNFL Perspective**

P. Parkes

(British Nuclear Fuels)

**High Level Waste Partitioning Studies at the Research Centre Jülich**

U. Wenzel

(Forschungszentrum Juelich - Institute for Safety Research and Reactor Technology  
Section for Nuclear Waste Management)

**New Nuclear Safe Plutonium Ceramic Compositions with Neutron Poisons for Plutonium Storage**

B. A. Nadykto<sup>1</sup>, L. F. Timofeeva<sup>2</sup>

(<sup>1</sup>RFNC-VNIIEF, Russia, <sup>2</sup>GSCRF-VNIINM, Russia)

**Conference  
Banquet**

La Fonda Hotel, 6:30–8:30 P.M.

**“Plutonium, Nonproliferation, and the Future of Nuclear Power”**

J. P. Holdren

(Teresa and John Heinz Professor of Environmental Policy at the Kennedy School of Government and Director of the Science, Technology, and Public Policy Program, Harvard University)

THURSDAY, JULY 13, 2000

**V. Actinides/  
TRU Wastes**

La Fonda Ballroom, 8:30 A.M.–12:00 P.M.

**Theoretical Predictions of Hydrolysis and Complex Formation  
of the Heaviest Elements**

V. Pershina

(Institut für Kernchemie, Universität Mainz, Germany)

**New Field of Actinides Solution Chemistry; Electrochemical Study on Phase Transfer  
of Actinide Ions across Aqueous/Organic Solutions Interface**Y. Kitatsuj<sup>1</sup>, H. Aoyagi<sup>1</sup>, Z. Yoshida<sup>1</sup>, S. Kihara<sup>2</sup>(<sup>1</sup>Advanced Science Research Center, Japan Atomic Energy Research Institute, Japan, <sup>2</sup>Department of Chemistry, Kyoto Institute of Technology, Japan)**Extraction of Lanthanides and Actinides from H. A. Waste by Calix[4]Arenes Bearing CMPO Units**

J. F. Dozol, A. Garcia Carrera, H. Rouquette

(DCC /DESD / SEP / LPTE, CEA Cadarache, France)

**Two New Insoluble Polymer Composites for the Treatment of LLW:****1. Polypyrrole Doped by UO<sub>2</sub><sup>2+</sup> Complexing Polyanions 2. UO<sub>2</sub><sup>2+</sup> Complexing Sol-gel Based Compos-  
ites. Stability Constants, Leaching Tests, Alpha and Gamma Irradiation**D. Leroy<sup>1</sup>, L. Martinot<sup>1</sup>, F. Caprasse<sup>1</sup>, C. Jérôme<sup>2</sup>, R. Jérôme<sup>2</sup>(<sup>1</sup>Coordination and Radiochemistry, University of Liège, Belgium, <sup>2</sup>Center for Education and Research on Macromolecules (CERM), University of Liège, Belgium)

BREAK

**Waste Forms from the Electrometallurgical Treatment of DOE Spent Fuel:  
Production and General Characteristics**R. W. Benedict<sup>1</sup>, S. G. Johnson<sup>1</sup>, D. D. Keiser<sup>1</sup>, T. P. O'Holleran<sup>1</sup>, K. M. Goff<sup>1</sup>, S. McDeavitt<sup>2</sup>, W. Ebert<sup>2</sup>(<sup>1</sup>Argonne National Laboratory-West, <sup>2</sup>Argonne National Laboratory-East)**Plutonium and Uranium Disposition in a Sodalite/Glass Composite Waste Form via XAFS**

M. K. Richmann, A. J. Kropf, D. T. Reed, S. B. Aase,

M. C. Hash, L. Putty, D. Lexa.

(Argonne National Laboratory, Chemical Technology Division)

Conference Rapporteur: Darleane Hoffman  
(Lawrence Berkeley National Laboratory)  
La Fonda Ballroom, 11:30 A.M.–12:00 P.M.**Conference  
Summary and  
Assessment**

## Poster Session Presentations

Session Co-Chairs: Sandra Mecklenberg & David E. Hobart  
 La Fonda Hotel Santa Fe Room, New Mexico Room, & Mezzanine, 1:30–5:00 P.M.

### Materials Science

- 1. XANES and EXAFS Studies of Plutonium (III, VI) Sorbed on Thorium Oxide.**  
 R. Drot<sup>1</sup>, E. Ordóñez-Regil<sup>1</sup>, E. Simoni<sup>1</sup>, Ch. Den Auwer<sup>2</sup>, Ph. Moisy<sup>2</sup>  
 (<sup>1</sup>Université Paris Sud, France, <sup>2</sup>CEA Marcoule, DCC/DRRV/SEMP, France)
- 2. Effects Of Fission Product Accumulation in Cubic Zirconia**  
 L. Wang, S. Wang, S. Zhu, R. Ewing  
 (University of Michigan)
- 3. Identification of a Physical Metallurgy Surrogate for the Plutonium-1 Wt% Gallium Alloy**  
 F. Gibbs  
 (Los Alamos National Laboratory)
- 4. Innovative Concepts for the Plutonium Facilities at La Hague**  
 B. Gillet<sup>1</sup>, F. Drain<sup>2</sup>, A. Gresle<sup>2</sup>  
 (<sup>1</sup>COGEMA, France, <sup>2</sup>SGN, France)
- 5. Anisotropic Expansion of Pu Through the  $\alpha$ - $\beta$ - $\gamma$  Phase Transitions While Under Radial Compressive Stress**  
 D. R. Spearing, D. K. Veirs, F. C. Prenger  
 (Los Alamos National Laboratory)
- 6. Contribution of Water Vapor Pressure to Pressurization of Plutonium Dioxide Storage Containers**  
 D. K. Veirs, J. S. Morris, D. R. Spearing  
 (Los Alamos National Laboratory)
- 7. Surveillance of Sealed Containers with Plutonium Oxide Materials**  
 L. A. Worl, J. M. Berg, D. Ford, D. D. Hill, M. Martinez, J. McFarland, J. Morris, D. Padilla, C. Prenger, K. Rau, C. Smith, D. K. Veirs  
 (Los Alamos National Laboratory)
- 8.  $\text{PuO}_2$  Surface Catalyzed Reactions: Recombination of  $\text{H}_2$  and  $\text{O}_2$  and the Effects of Adsorbed Water on Surface Reactivity**  
 L. Morales  
 (Los Alamos National Laboratory)
- 9. Kinetics of the Reaction Between Plutonium Dioxide and Water from 25 to 350°C: Formation and Properties of the Phase  $\text{PuO}_{2+x}$**   
 L. Morales<sup>1</sup>, J. Haschke<sup>2</sup>, T. Allen<sup>1</sup>  
 (<sup>1</sup>Los Alamos National Laboratory, <sup>2</sup>Actinide Consulting)
- 10. A Conceptual and Calculational Model for Gas Formation from Impure Calcined Plutonium Oxides**  
 J. L. Lyman, P. G. Eller  
 (Los Alamos National Laboratory)
- 11. Status of the Pit Disassembly and Conversion Facility**  
 W. T. Wood, L. T. Christensen  
 (Los Alamos National Laboratory)

<b>TRU Waste Forms</b>	<p><b>12. Plutonium Packaging and Long Term Storage</b>  J. A. Lloyd, D. E. Wedmen  (Los Alamos National Laboratory)</p> <p><b>13. Phase Composition of Murataite Ceramics for Excess Weapons Plutonium Immobilization</b>  I. A. Sobolev<sup>1</sup>, S.V. Stefanovsky<sup>1</sup>, B. F. Myasoedov<sup>2</sup>, Y. M. Kuliako<sup>2</sup>, S.V. Yudintsev<sup>3</sup>  ('SIA Radon, Russia, <sup>2</sup>Institute of Geochemistry, Russia, <sup>3</sup>Institute of Geology of Ore Deposits, Russia)</p> <p><b>14. Analysis of Strain Anisotropy in Delta Stabilized Pu-Ga Alloys</b>  L. Morales, A. Lawson, J. Kennison  (Los Alamos National Laboratory)</p> <p><b>15. Preparation of Actinide Boride Materials via Solid-State Metathesis Reactions and Actinide Dicarbollide Precursors</b>  A. J. Lupinetti, J. Fife, E. Garcia, K. D. Abney  (Los Alamos National Laboratory)</p> <p><b>16. The Self-Irradiation Driven Enhancement of Diffusion Processes in Nuclear-Safe Ceramics</b>  E. A. Smirnov<sup>1</sup>, L. F. Timofeeva<sup>2</sup>  ('Moscow State Engineering Physics Institute [Technical University], Russia, <sup>2</sup>All-Russia Scientific Research A.A. Bochvar Institute of Inorganic Materials, Russia)</p> <p><b>17. The Regularities of Diffusion Processes in the Low-Temperature Phases of Neptunium and Plutonium</b>  E. A. Smirnov, A. A. Shmakov  (Moscow State Engineering Physics Institute [Technical University], Russia)</p> <p><b>18. Interdiffusion in U–Pu–Zr and U–Zr–Ti Solid Solutions</b>  O. A. Alexeev<sup>1</sup>, A. A. Shmakov<sup>2</sup>, E. A. Smirnov<sup>2</sup>  ('All-Russia Scientific Research A. A. Bochvar Institute of Inorganic Materials, Russia,  <sup>2</sup>Moscow State Engineering Physics Institute [Technical University], Russia)</p> <p><b>19. Fundamental Research on Patterns of Time Behavior of the Structure and Properties of Plutonium Dioxide Produced by Different Process Arrangements</b>  L. N. Konovalov, V. A. Zhmak, Ya. N. Chebotarev, A. V. Laushkin, V. Ye. Klepatskiy  (A. A. Bochvar All-Russia Scientific Research Institute of Inorganic Materials, Russia)</p> <p><b>20. A Combinatorial Chemistry Approach to the Investigation of Cerium Oxide and Plutonium Oxide Reactions with Small Molecules</b>  J. T. Brady, B. P. Warner, J. S. Bridgewater, G. J. Havrilla, D. E. Morris, C. T. Buscher  (Los Alamos National Laboratory)</p> <p><b>21. Destruction of Halogenated Organics with Hydrothermal Processing</b>  L. A. Worl, S. J. Buelow, D. Harradine, D. Hill, R. McInroy, D. Padilla  (Los Alamos National Laboratory)</p> <p><b>22. Preparation of Plutonium-Bearing Ceramics Via Mechanically Activated Precursor</b>  S.V. Chizhevskaya, S.V. Stefanovsky  (SIA Radon, Russia)</p> <p><b>23. A Single Material Approach to Nuclear Waste Disposal</b>  J. V. Beitz and C. W. Williams  (Argonne National Laboratory)</p>
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- 24. Immobilization Of Pu-Containing Solution Using Porous Crystalline Matrix**  
A. S. Aloy, N. V. Sapozhnikova, A.V. Strelnikov, A. G. Anshits, D. A. Knecht, J. Macheret  
(Khlopin Radium Institute, Russia)
- 25. Immobilization of Pu-Containing Wastes into Glass and Ceramics: Results of US-Russia Collaboration**  
E. B. Anderson<sup>1</sup>, A. S. Aloy<sup>1</sup>, B. E. Burakov<sup>1</sup>, L. J. Jardine<sup>2</sup>  
(<sup>1</sup>Khlopin Radium Institute, Russia, <sup>2</sup>Lawrence Livermore National Laboratory)
- 26. Performance Evaluation of Pyrochlore Ceramic Waste Forms by Single Pass Flow Through Testing**  
P. Zhao<sup>1</sup>, W. L. Bourcier<sup>2</sup>, B. K. Esser<sup>2</sup>, H. F. Shaw<sup>2</sup>  
(<sup>1</sup>G. T. Seaborg Institute for Transactinium Science, <sup>2</sup>Lawrence Livermore National Laboratory)
- 27. Experience of V. G. Khlopin Radium Institute on Synthesis and Investigation of Pu-Doped Ceramics**  
B. E. Burakov, E. B. Anderson  
(V. G. Khlopin Radium Institute, Russia)
- 28. Absorption Spectra of Plutonium in Phosphate and Borosilicate Glasses**  
Yu. A. Barbanel, A. S. Aloy, V. V. Kolin, V. P. Kotlin, A.V. Trofimenko  
(V. G. Khlopin Radium Institute, Russia)
- 29. Microstructure and Thermodynamics of Zirconolite- and Pyrochlore-Dominated Synroc Samples: HRTEM and AEM Investigation**  
H. Xu<sup>1</sup>, Y. Wang<sup>2</sup>  
(<sup>1</sup>The University of New Mexico, <sup>2</sup>Sandia National Laboratories)
- 30. Electron Microscopy Study of a Radioactive Glass-Bonded Sodalite Ceramic Waste Form**  
W. Sinkler, T. P. O'Holleran, T. L. Moschetti  
(Argonne National Laboratory)
- 31. Site Preferences of Actinide Cations in [NZP] Compounds**  
H. T. Hawkins<sup>1</sup>, D. R. Spearing<sup>1</sup>, D. M. Smith<sup>1</sup>, F. G. Hampel<sup>1</sup>, D. K. Veirs<sup>1</sup>, B. E. Scheetz<sup>2</sup>  
(<sup>1</sup>Los Alamos National Laboratory, <sup>2</sup>Pennsylvania State University)
- 32. Actinide-Zirconia Based Materials for Nuclear Applications: Cubic Stabilized Zirconia Versus Pyrochlore Oxide**  
P. E. Raison<sup>1</sup>, R. G. Haire<sup>2</sup>  
(<sup>1</sup>Commissariat à l'Energie Atomique, France, <sup>2</sup>Oak Ridge National Laboratory)
- 33. Fundamental Aspects of Actinide-Zirconium Pyrochlore Oxides: Systematic Comparison of the Pu, Am, Cm, Bk and Cf Systems**  
R. G. Haire<sup>1</sup>, P. E. Raison<sup>2</sup>  
(<sup>1</sup>Oak Ridge National Laboratory, <sup>2</sup>Commissariat à l' Energie Atomique, France)
- 34. Identification of Source Term of Plutonium in the Environment Around WIPP Site**  
B. Hooda, C. Ortiz  
(Westinghouse)
- 35. Elimination or Reduction of Magnesium Oxide as the Engineered Barrier at the Waste Isolation Pilot Plant**  
M. K. Silva  
(Environmental Evaluation Group)

## Nuclear Fuels/ Isotopes

- 36. Immobilization of Plutonium-Containing Waste into Borobasalt, Piroxen and Andradite Mineral-Like Compositions**  
 Yu. I. Matyunin<sup>1</sup>, S.V. Yudintsev<sup>2</sup>, L. J. Jardine<sup>3</sup>  
 (<sup>1</sup>SSC RF VNIINM A.A. Bochvar, Russia, <sup>2</sup>IGEM RAS, Russia, <sup>3</sup>Lawrence Livermore National Laboratory)
- 37. Technology and Equipment Based on Induction Melters with “Cold” Crucible for Reprocessing Active Metal Waste**  
 V. G. Pastushkov, A. V. Molchanov, V. P. Serebryakov, T. V. Smelova, I. N. Shestoporov  
 (SSC RF VNIINM, Russia)
- 38. Handling Liquid Radioactive Wastes That Contain Ammonium Nitrate**  
 V. P. Varykhanov, B. S. Zakharkin, V. S. Kucherenko, V. V. Revyakin, L. N. Solov'yeva  
 (A. A. Bochvar All-Russia Scientific Research Institute of Inorganic Materials, Russia)
- 39. The Myth of the “Proliferation-Resistant” Closed Nuclear Fuel Cycle**  
 E. S. Lyman  
 (Nuclear Control Institute)
- 40. Advanced MOX Fabrication Methods for LWR’s**  
 D. Haas, J. Somers, C. Walker, S. Brémier  
 (Institute for Transuranium Elements, Germany)
- 41. Synthesis of the U.S. Specified Ceramics using MOX Fuel Production Expertise**  
**V. A. Astafiev, A. E. Glushenkov, V. M. Sidelnikov, G. B. Borisov, O. A. Mansourov**  
 (A. A. Bochvar All-Purpose Research Institute of Inorganic Materials, Russia)
- 42. Research Program for the 660 Mev Proton Accelerator Driven MOX-Plutonium Subcritical Assembly**  
 V. S. Barashenkov, V. S. Buttsev, G. L. Buttseva, S. Ju. Dudarev, A. Polanski, I. V. Puzynin,  
 A. N. Sissakian  
 (Joint Institute for Nuclear Research, Russia)
- 43. Continuous Process of Powder Production for MOX Fuel Fabrication According to “GRANAT” Technology**  
 V. E. Morkovnikov, L. S. Raginskiy, A. P. Pavlinov, V. A. Chernov, V. V. Revyakin,  
 V. S. Varikhanov, V. N. Revnov  
 (SSC RF VNIINM, Russia)
- 44. Fabrication Technology and Characteristics of  $\text{AmO}_2\text{-MgO}$  Cercer Materials for Transmutation**  
 Y. Croixmaire, A. Mocellin, D. Warin  
 (Commissariat à l’Energie Atomique, France)
- 45. Analysis Capabilities for Plutonium-238 Programs**  
 A. S. Wong, G. H. Rinehart, M. H. Reimus, M. E. Pansoy-Hielvik, P. F. Moniz, J. C. Brock,  
 S. E. Ferrara, and S. S. Ramsey  
 (Los Alamos National Laboratory)
- 46. Modeling of Fission Gas Release in MOX Fuel Considering the Distribution of Pu-rich Particles**  
 Y. H. Koo, B. H. Lee, D. S. Sohn  
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- 47. Comparative Analysis of Basic Process Arrangements for Converting Surplus Weapons Grade Plutonium to MOX Fuel**  
V. P. Varykhanov, E. M. Glagovskiy, B. S. Zakharkin, V. V. Revyakin, O. V. Khauystov  
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- 48. Gallium Behavior in Molten Salt Processes of Plutonium Conversion into Nuclear Fuel**  
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(<sup>1</sup>IHTE, Russia, <sup>2</sup>RIAR, Russia)
- 49. First Experience on Russian Military Origin Plutonium Conversion into Nuclear Fuel**  
A. F. Grachev<sup>1</sup>, O. V. Bychkov<sup>1</sup>, A. A. Mayorshin<sup>1</sup>, V. A. Kisly<sup>1</sup>, D. A. Bobrov<sup>1</sup>,  
A. G. Osipenko<sup>1</sup>, L. G. Babikov<sup>1</sup>, A. N. Valeyev<sup>1</sup>, V. B. Ivanov<sup>2</sup>  
(<sup>1</sup>RIAR, Russia, <sup>2</sup>MinAtom, Russia)
- 50. Technical Challenges in Support of the Plutonium Materials Conversion Program in Russia**  
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- 51. CHEMOX : An Integrated Facility for the Conversion of Russian Weapon-Graded Plutonium into Oxide for MOX Fuel Fabrication**  
E. Glagovskiy<sup>1</sup>, Y. Kolotilov<sup>2</sup>, B. Sicard<sup>3</sup>, F. Josso<sup>3</sup> G. Fraize<sup>4</sup>, N. Herlet<sup>3</sup>, A. Villa<sup>4</sup>, P. Brossard<sup>3</sup>  
(<sup>1</sup>A.A. Bochvar, Russia, <sup>2</sup>GSPI, Russia, <sup>3</sup>CEA, France, <sup>4</sup>COGEMA, France)
- 52. Radiation-Chemical Behaviour of Plutonium in Solutions DAMP and TOPO in n-dodecane**  
D. A. Fedoseev  
(SSC A.A.Bochvar All-Russia Research Institute of Inorganic Materials, Russia)
- 53. Dissolution of Phosphate Matrices Based on the Thorium Phosphate Diphosphate**  
N. Dacheux<sup>1</sup>, A.C. Thomas<sup>1</sup>, V. Brandel<sup>1</sup>, M. Genet<sup>1</sup>, P. Le Coustumer<sup>2</sup>  
(<sup>1</sup>Nuclear Physics Institute, France, <sup>2</sup>LMGE, France)
- 54. Modelling of Nitric Acid and U(VI) Co-Extraction in Annular Centrifugal Contactors**  
E.T. Gaubert<sup>1</sup>, M. Jobson<sup>1</sup>, J.E. Birket<sup>2</sup>, I.S. Denniss<sup>2</sup>, I. May<sup>3</sup>  
(<sup>1</sup>Department of Process Integration, UK, <sup>2</sup>Research and Technology, UK, <sup>3</sup>BNFL Radiochemistry Center of Excellence, UK)
- 55. The Measurement of U(VI) and Np(IV) Mass Transfer in a Single Stage Centrifugal Contactor**  
I. May<sup>1</sup>, E.J. Birkett<sup>2</sup>, I.S. Denniss<sup>2</sup>, E.T. Gaubert<sup>3</sup> and M. Jobson<sup>3</sup>  
(<sup>1</sup>BNFL Radiochemical Centre of Excellence, UK, <sup>2</sup>Research and Technology, BNFL Sellafield, UK,  
<sup>3</sup>Department of Process Integration, UMIST, UK)
- 56. Actinide Chemistry in Room Temperature Ionic Liquids**  
D. A. Costa, W. H. Smith, K. D. Abney, W. J. Oldham  
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- 57. Oxidation of Pu(IV) and Pu(V) with Sodium Hypochlorite**  
G. R. Choppin, A. Morgenstern  
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- 58. Contribution of the “Simple Solutions” Concept to Estimate Density of Concentrated Solutions**  
C. Sorel, P. Moisy, B. Dinh, P. Blanc  
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- 59. Structural Studies of f-Element Complexes with Soft Donor Extractants**  
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- 60. Lewis Base Binding Affinities and Redox Properties of Plutonium Complexes**  
S. M. Oldham<sup>1</sup>, A. R. Schake<sup>1</sup>, C. J. Burns<sup>1</sup>, A. N. Morgan III<sup>1</sup>, R. C. Schnabel<sup>2</sup>, B. P. Warner<sup>1</sup>, D. A. Costa<sup>1</sup>, W. H. Smith<sup>1</sup>  
(<sup>1</sup>Los Alamos National Laboratory, <sup>2</sup>Eckerd College)
- 61. QSAR of Distribution Coefficients for Pu(NO<sub>3</sub>)<sub>6</sub><sup>2-</sup> Complexes Using Molecular Mechanics**  
E. Moody  
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- 62. Materials Compatibility for <sup>238</sup>Pu-HNO<sub>3</sub>/HF Solution Containment: <sup>238</sup>Pu Aqueous Processing**  
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- 63. Process Parameters Optimization/Nitrate Anion Exchange for Pu-238 Aqueous Processing**  
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- 66. Dry Process for Recovering Gallium from Weapons Plutonium Using a Rotary Furnace Equipped with a Copper Collector**  
C. V. Philip<sup>1</sup>, R. G. Anthony<sup>1</sup>, C. Shivraj<sup>1</sup>, E. Philip<sup>1</sup>, W. W. Pitt<sup>1</sup>, M. Roundhill<sup>2</sup>, C. Beard<sup>3</sup>.  
(Texas A&M University, <sup>2</sup>Texas Tech University, <sup>3</sup>The University of Texas)
- 67. Purification of Plutonium via Electromagnetic Levitation**  
J. C. Lashley, M. S. Blau, J. R. Quagliano  
(Los Alamos National Laboratory)
- 68. Pu-238 Recovery and Salt Disposition from the Molten Salt Oxidation Process**  
M. L. Remerowski, J. J. Stimmel, A. S. Wong, K. B. Ramsey  
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- 69. Stabilization of <sup>238</sup>Pu-Contaminated Combustible Waste by Molten Salt Oxidation**  
J. J. Stimmel<sup>1</sup>, M. L. Remerowski<sup>1</sup>, K. B. Ramsey<sup>1</sup>, J. Mark Heslop<sup>2</sup>  
(<sup>1</sup>Los Alamos National Laboratory, <sup>2</sup>Naval Surface Warfare Center-Indian Head Division)
- 70. Low Temperature Reaction of Reillex φ HPQ and Nitric Acid**  
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- 71. Molten Salt Fuels for Treatment Plutonium and Radwastes In Ads and Critical Systems**  
 V. V. Ignatiev  
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- 72. Robust Membrane Systems for Actinide Separations**  
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- 73. Modeling Hollow Fiber Membrane Separations Using Voronoi Tessellations**  
 R. Long<sup>1</sup>, T. T. Liang<sup>1</sup>, J. Rogers<sup>1</sup>, S. Yarbro<sup>2</sup>  
 (<sup>1</sup>New Mexico State University, <sup>2</sup>Los Alamos National Laboratory)
- 74. Identification of Oligomeric Uranyl Complexes Under Highly Alkaline Conditions**  
 W. V. Konze, D. L. Clark, S. D. Conradson, R. J. Donohoe, J. C. Gordon, P. L. Gordon, D. W. Keogh, D. E. Morris, C. D. Tait  
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- 75. Investigation of Conditions of the Process of Dissolving Weapons Grade Plutonium in Mixtures of Nitric and Hydroflouric Acids**  
 V. P. Varykhanov, B. S. Zakharkin, V. S. Kucherenko, L. N. Solov'yeva  
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- 76. Investigation of Radiation-Chemical Behaviour of Plutonium in the Groundwaters and Soils**  
 D. A. Fedoseev, M. Yo. Dunaeva, M. V. Vladimirova.  
 (SSC A.A.Bochvar All-Russia Research Institute Of Inorganic Materials, Russia)
- 77. Polymeric Species of Pu in Low Ionic Strength Media**  
 V. V. Romanovski, C. E. Palmer, H. F. Shaw, W. L. Bourcier, L. J. Jardine  
 (Lawrence Livermore National Laboratory)
- 78. Solubility and Speciation of Plutonium(VI) Carbonates and Hydroxides**  
 S. D. Reilly, M. P. Neu, W. Runde  
 (Los Alamos National Laboratory)
- 79. Plutonium in the Environment: Speciation, Solubility, and the Relevance of Pu(VI)**  
 W. Runde, D. Efurd, M. P. Neu, S. D. Reilly, C. VanPelt, S. D. Conradson  
 (Los Alamos National Laboratory)
- 80. Immobilizing U from Solution by Immobilized Sulfate-Reducing Bacteria of *Desulfovibrio Desulfuricans***  
 H. Xu, L. L. Barton  
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- 81. Interaction of Actinides with Aerobic Soil Bacteria**  
 P. J. Panak, H. Nitsche  
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- 82. Plutonium Uptake by Common Soil Aerobes**  
 S. John, C. Ruggiero, L. Hersman, M. Neu  
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	<b>85. Actinide Interactions with Aerobic Soil Microbes and Their Exudates: The Reduction of Plutonium with Desferrioxamine Siderophores</b> C. E. Ruggiero, J. H. Matonic, M. P. Neu, S. D. Reilly (Los Alamos National Laboratory)		
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- 94. Emission from Neptunyl Ions in the Near IR**  
H. J. Dewey, T. A. Hopkins  
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- 95. Spectroscopy of  $\text{UO}_2\text{Cl}_4^{2-}$  in Basic Aluminum Chloride:1-Ethyl-3-methylimidazolium Chloride**  
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- 96. ARIES Nondestructive Assay System Operation and Performance**  
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- 97. Peak Asymmetry Understanding in  $\alpha$  Liquid Scintillation with  $\beta/\gamma$  Rejection**  
J. Aupiais<sup>1</sup>, N. Dacheux<sup>2</sup>  
(<sup>1</sup>Service Radioanalyses Chimie Environnement, CEA, France, <sup>2</sup>Institut de Physique Nucléaire, France)
- 98. A New Method of Alpha Spectrometry Based on Solid-State Nuclear Track Detection: Principles, Performance, Applicability**  
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(<sup>1</sup>Radiation Protection Institute, Ukraine, <sup>2</sup>Kiev National Taras Shevchenko University, Ukraine)
- 99. Analysis of Aerosol Distribution Inside the Object “Shelter”**  
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- 100. Ultratrace Analysis of Plutonium in Environmental Samples by Resonance Ionization Mass Spectrometry (RIMS)**  
N. Trautmann<sup>1</sup>, N. Erdmann<sup>1</sup>, C. Grüning<sup>1</sup>, G. Huber<sup>2</sup>, J. V. Kratz<sup>1</sup>, M. Nunnemann<sup>2</sup>,  
G. Passler<sup>2</sup>, A. Waldek<sup>1</sup>  
(<sup>1</sup>Institut für Kernchemie, Universität Mainz, Germany, <sup>2</sup>Institut für Physik, Universität Mainz, 55099 Mainz, Germany)
- 101. Rad Calc III: Radioanalysis Calculation Program for Plutonium and Americium Determination**  
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- 102. A New Glovebox—Surface Science Facility for the Study of Plutonium Surface Chemistry at AWE**  
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- 106. Comparison of Different Surface Quantitative Analysis Methods: Application to Corium**  
 N. Guilbaud<sup>1</sup>, D. Blin<sup>1</sup>, P. Pérodeaud<sup>1</sup>, C. Guéneau<sup>2</sup>, O. Dugne<sup>1</sup>.  
 (<sup>1</sup>DCC/DTE/SIM-CEA, France, <sup>2</sup>DCC/DPE/SPCP-CEA, France)
- 107. Qualification of the Bubble Detector as Neutron Dosemeter at the MOX-Plant of Belgonucleaire.**  
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- 108. Microscopic Determination of the Size Distribution of PuO<sub>2</sub>-Rich Zones and Pores in Mox Pellets with an Image Analysis System**  
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- 109. Plasmon Resonance Spectroscopy of Plutonium Metal**  
 R. K. Schulze, J. D. Farr, J. C. Archuleta  
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- 110. Atomic H(D) Adsorption on Polycrystalline UO<sub>2</sub> and UO<sub>2</sub>(111) Surfaces**  
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- 111. Accelerator Mass Spectrometry Measurements of Actinide Concentrations and Isotope Ratios**  
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- 112. Determination of Mercury in Radioactive Samples by Cold Vapor Atomic Fluorescence Spectrometry**  
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- 113. Single Crystal Growth of (U<sub>1-x</sub>Pu<sub>x</sub>)O<sub>2</sub> Mixed Oxides**  
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 (European Commission, Joint Research Centre, Institute for Transuranium Elements, Germany)
- 114. Metallofullerenes Encapsulating Actinide Atoms**  
 H. Nakahara<sup>1</sup>, K. Sueki<sup>1</sup>, K. Akiyama<sup>1</sup>, Y. L. Zhao<sup>1</sup>, Y. Nagame<sup>2</sup>, K. Tuskada<sup>2</sup>  
 (<sup>1</sup>Tokyo Metropolitan University, Japan, <sup>2</sup>Japan Atomic Research Institute, Japan)
- 115. Kinetics of the Oxidation of Pu(IV) by Manganese Dioxide**  
 A. Morgenstern, G. R. Choppin  
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- 116. Calculation of Structural and Thermodynamic Properties of Pu-doped Thorium Phosphate Diphosphate Th<sub>4-x</sub>Pux(PO<sub>4</sub>)<sub>4</sub>P<sub>2</sub>O<sub>7</sub>**  
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- 117. Prediction of Thermodynamic Property of Pu-zircon and Pu-pyrochlore**  
 H. Xu<sup>1</sup>, Y. Wang<sup>2</sup>  
 (<sup>1</sup>The University of New Mexico, <sup>2</sup>Sandia National Laboratories)

## Pu and Pu Compounds

## Actinide Compounds & Complexes

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 J. Terry<sup>1</sup>, R. K. Schulze<sup>1</sup>, T. G. Zocco<sup>1</sup>, J. D. Farr<sup>1</sup>, J. Archuleta<sup>1</sup>, M. Ramos<sup>1</sup>, R. Martinez<sup>1</sup>, B. Martinez<sup>1</sup>, R. Pereya<sup>1</sup>, J. Lashley<sup>1</sup>, S. Wasserman<sup>2</sup>, M. Antonio<sup>2</sup>, S. Skanthakumar<sup>2</sup>, L. Soderholm<sup>2</sup>  
 (<sup>1</sup>Los Alamos National Laboratory, <sup>2</sup>Argonne National Laboratory)
- 119. Surface Analysis of PuO<sub>2</sub> Powders: Thermal Dehydration/Water Rehydration Studies**  
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- 120. Important New Insights into f-Electron Behavior via Ultra-High Pressure Studies of Transplutonium Elements**  
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 (<sup>1</sup>European Institute for Transuranium Elements, Germany, <sup>2</sup>Oak Ridge National Laboratory, <sup>3</sup>European Synchrotron Radiation Facility, Grenoble, France)
- 121. Steric vs. Electronic Effects in Binary Uranyl Alkoxides: A Spectroscopic Perspective**  
 M. P. Wilkerson, C. J. Burns, D. E. Morris, R. T. Paine, B. L. Scott  
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- 122. Structural Preferences and Reactivity of Uranyl Alkoxide Complexes Prepared in Non-Protic Media**  
 M. P. Wilkerson<sup>1,2</sup>, C. J. Burns<sup>1</sup>, D. E. Morris<sup>1</sup>, R. T. Paine<sup>2</sup>, B. L. Scott<sup>1</sup>  
 (<sup>1</sup>Los Alamos National Laboratory, <sup>2</sup>The University of New Mexico)
- 123. Synthesis and Structural Studies of Plutonium Complexes Containing Nitrogen and Sulfur Donor Ligands**  
 J. H. Matonic<sup>1</sup>, M. P. Neu<sup>1</sup>, B. Scott<sup>1</sup>, M. Mazzanti<sup>2</sup>  
 (<sup>1</sup>Los Alamos National Laboratory, <sup>2</sup>Laboratoire de Reconnaissance Ionique, CEA-Grenoble)
- 124. Structures of Plutonium Coordination Compounds: A Review of Past Work, Recent Single Crystal X-Ray Diffraction Results, and What We're Learning About Plutonium Coordination Chemistry**  
 M. P. Neu, J. H. Matonic, D. M. Smith, B. L. Scott  
 (Los Alamos National Laboratory)
- 125. Characterization of Uranium Compounds After a Fire Ignition**  
 D. Labroche, D. Pisson, P. Ramel, O. Dugne  
 (Commissariat à l'Energie Atomique CEA/Valrho, France)
- 126. Solid State Chalcophosphate Compounds of Actinide Elements**  
 P. M. Briggs Piccoli<sup>1</sup>, R. F. Hess<sup>2</sup>, K. D. Abney<sup>2</sup>, J. R. Schoonover<sup>2</sup>, P. K. Dorhout<sup>1,2</sup>  
 (<sup>1</sup>Colorado State University, <sup>2</sup>Los Alamos National Laboratory)
- 127. Thermodynamic and Structural Characterisation of the UFeO<sub>4</sub> Compound**  
 D. Labroche, D. Pisson, P. Ramel, O. Dugne  
 (Commissariat à l'Energie Atomique CEA/Valrho, France)
- 128. Thermodynamic Properties of Pu<sup>3+</sup> and Pu<sup>4+</sup> Aquolions**  
 F. David, J. Purans, B. Fourest, S. Hubert, V. Vokhmin, C. Madic  
 IPN, Orsay, France, University of Riga, Lettonia, Ins. Phys. Chem. Russia, CEA Marcoule, France)

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- 130. Theoretical Studies of Actinyl Crown Ether Inclusion Complexes**  
R. L. Martin, P. J. Hay, G. Schreckenbach  
(Los Alamos National Laboratory)
- 131. Non-Aqueous Chemistry of Uranyl Complexes with Tripodal Ligands**  
C. J. Burns, D. L. Clark, P. B. Duval, B. L. Scott  
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- 132. Organoactinides—New Type of Catalysts for Carbon-Carbon, Carbon-Nitrogen, and Carbon-Silicon Bond Formation**  
M. S. Eisen  
(Israel Institute of Technology, Israel)
- 133. A Novel Equation for Predicting Stability Constants of Aqueous Metal Complexes and Actinide Binding to Protein**  
H. Xu<sup>1</sup>, Y. Wang<sup>2</sup>  
('The University of New Mexico, <sup>2</sup>Sandia National Laboratories)
- 134. Radiation Effects in Uranium-Niobium Titanates**  
J. Lian, S. X. Wang, L. M. Wang, R. C. Ewing  
(Department of Nuclear Engineering and Radiological Sciences, University of Michigan)
- 135. Electronic and Geometric Structure of Pu Metal: A High-Resolution Photo-electron Spectromicroscopy Study**  
J. Terry<sup>1</sup>, R. K. Schulze<sup>1</sup>, T. Zocco<sup>1</sup>, J. Lashley<sup>1</sup>, J. D. Farr<sup>1</sup>, K. Heinzelman<sup>2</sup>, E. Rotenberg<sup>2</sup>, D. K. Shuh<sup>2</sup>, M. Blau<sup>3</sup>, J. Tobin<sup>3</sup>  
('Los Alamos National Laboratory, <sup>2</sup>Ernest Orlando Lawrence Berkeley National Laboratory, <sup>3</sup>Lawrence Livermore National Laboratory)
- 136. Preliminary Study of ( $Pu_{1-x}AM_x$ ) Solid Solutions**  
F. Wastin<sup>1</sup>, E. Gomez-Marin<sup>1</sup>, D. Bouexiere<sup>1</sup>, J. C. Spirlet<sup>1</sup>, and J. M. Fournier<sup>2</sup>  
('European Commission, Joint Research Centre, Institute for Transuranium Elements, Germany, <sup>2</sup>Université Joseph Fourier, Laboratoire LIME, France)
- 137. Actinide Electronic Structure and Atomic Forces**  
R. C. Albers<sup>1</sup>, S. P. Rudin<sup>1</sup>, D. R. Trinkle<sup>1</sup>, M. D. Jones<sup>2</sup>  
('Los Alamos National Laboratory, <sup>2</sup>SUNY Buffalo)
- 138. Determination of Mechanical Properties of Aged Plutonium from ARIES Pits by Instrumented Sharp Indentation**  
T. Huntley, K. Johnson, D. Olivas, R. Mulford, W. Brown, K. Walter, M. Stout  
(Los Alamos National Laboratory)
- 139. Density of Plutonium Metal as a Function of Age**  
R. N. Mulford, M. Valdez  
(Los Alamos National Laboratory)

**140. Electronic Structure of Elements and Compounds and Electronic Phases of Solids**

B. A. Nadykto  
(RFNC-VNIIEF, Russia)

**141. 5f Band Dispersion in the Highly Correlated Electronic Structure of Uranium Compounds**

D. P. Moore, J. J. Joyce, A. J. Arko, L. Morales, J. Sarrao  
(Los Alamos National Laboratory)

**142. All-Electron Density Functional Theory Calculations of the Zero-Pressure Properties of Plutonium Dioxide**

J. C. Boettger<sup>1</sup>, A. K. Ray<sup>2</sup>  
(<sup>1</sup>Los Alamos National Laboratory, <sup>2</sup>Department of Physics, University of Texas)

**143. Predictions of Plutonium Alloy Phase Stability using Electronic Properties**

D. L. Olson, G. R. Edwards, D. E. Dooley  
(Colorado School of Mines)

**144. Structural Stability in High Temperature Pu and Pu Alloys**

John Wills<sup>1</sup>, Olof R. Eriksson<sup>2</sup>, Heinrich Roder<sup>1</sup>  
(<sup>1</sup>Los Alamos National Laboratory, <sup>2</sup>Uppsala University, Sweden)

**145. Diffusion of Helium in Plutonium Alloys**

D. Dooley, B. Martinez, D. Olson, D. Olivas, R. Ronquillo, T. Rising  
(Los Alamos National Laboratory)

**146. Effects of Self-Irradiation Damage on Physical Properties of Stabilized Pu Alloys**

F. Freibert, B. Martinez, J. P. Baiardo, J. D. Olivas, R. Ronquillo  
(Los Alamos National Laboratory)

## REGISTRATION

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